ORAL HEALTH EDUCATION PROGRAMME

FOR KINDERGARTEN CHILDREN

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CONTENTS

1. ABSTRACT

The objective of this study was to test the following two null hypothesis. The first one stated that the effects of an oral health education programme for kindergarten children carried out by dental students were the same as those carried out by school teachers. The second one stated that the involvement of parents in an oral health education programme for kindergarten children did not result in better effects. The dependent variables for both hypotheses were the outcome measures of the effects of the oral health education programme which were the oral hygiene status and the oral health knowledge of the children. Three classes of kindergarten children studying in three different kindergartens were selected to be the study populations. A baseline survey consisting of an interview and a clinical examination was carried out to find out the oral health status, knowledge, and behaviours of the children. An oral health education programme designed by the Oral Health Education Unit of the government was delivered to the three groups of children using identical teaching aids. The programme was conducted either by dental students (Group S) or by school teachers (Group T). In addition, a parents' day was organized for one of the children groups (Group S+P). Oral health messages and information pamphlets were delivered to the parents. An evaluation survey was conducted two months later to detect changes. Results of the evaluation survey showed that there were significant improvements ($p < 0.05$) in the oral hygiene status of all three groups of children, as measured by the Visible Plaque Index. The differences between groups S and T were not statistically significant ($p > 0.05$) and it was concluded that the effect of the programme delivered by either dental students or school teachers was similar. However, the improvement in group S+P children was significant better ($p < 0.001$) than that in the other two groups. It was concluded that involvement of parents in an oral health education programme for kindergarten children would lead to better effects.

2. INTRODUCTION

There is a lot to learn as a baby grows up, through childhood and adolescence to adulthood. Depending on the stage of cognitive, emotional and physical development, a child learns different things and ideas at different times. Most young children start to go to kindergarten at age three in Hong Kong. This is an important transition of the learning environment, from home to a school setting, and it is at this stage in the kindergarten that many basic health habits of the children, such as personal and food hygiene, are developed or reinforced. These habits and the basic health knowledge they learn have great influence on the children's general health, and of course also oral health. Thus it is very important for oral health workers to ensure that correct oral health messages are delivered in the kindergartens and these should lead to the development of good oral health practices[1].

In early 1993 the Oral Health Education Unit (OHEU) of the Department of Health of the government launched a longitudinal 3-year programme with financial support from the Royal Hong Kong Jockey Club. The aim of this programme was to promote the oral health of all kindergarten children in Hong Kong. The OHEU produced a number of oral health teaching aids, packed in a kit, and distributed the kits to all kindergartens (over 3,000). There was a teacher's manual in the kit which gave instructions in planning oral health education activities and in using the teaching aids. The OHEU also invited kindergarten teachers to attend training sessions. Besides the teaching kit, a set of three story books, one for each of the age groups 3, 4 and 5, conveying different oral health messages were distributed to the children through the kindergartens. In these story books some messages for parents were also included.

As our group was interested in carrying out a project on oral health education, we arranged a meeting with the dentist in charge of the OHEU early this year to show our interest and support, and to know more about this programme. After the meeting, the contents of the teaching kit were shown to us which we thought were plentiful, of high quality and very suitable for young children. Although we could not directly participate in this longitudinal programme because of our limited time, we decided to cooperate with the OHEU and to make use of their new materials in our oral health education project.

In many school-based oral health education activities, school teachers were involved and they acted as the oral health educators[2,3]. This was also the case in a number of past community health projects carried out in Hong Kong by senior dental students which all concluded that school teachers were effective oral health educators[4-7]. This seems very reasonable as school teachers are key persons of the children with whom they have daily contacts. The children look up to them as their role model and they listen to and believe in what the their teachers say.

However, the involvement of school teachers as mediators in conveying oral health messages from the dental professionals to the children may introduce errors in the communication. The communication is more direct and the children may be more impressed if the messages come directly from dental professionals. Moreover, dental professionals have better knowledge on oral health matters than school teachers. Thus it seems, to us at least, that there are merits in delivering an oral health education programme to kindergarten children by ourselves rather than by school teachers.

There is little doubt that the children's parents are the most important persons to them. Parents are very close to their children and have great influence on the children's oral health attitudes and behaviours. The involvement of parents in an oral health education programme for children should greatly strengthen its effects.

In order to find out how an oral health education programme for children can be carried out in the most effective way in Hong Kong, we decided to carry out a project to test the following two null hypotheses.

1. Effects of an oral health education programme for kindergarten children carried out by dental students would be the same as those carried out by school teachers.

2. Involvement of parents in an oral health education programme for kindergarten children would not result in better effects.

The dependent variables for both hypotheses were the outcome measures of the effects of the oral health education programme which were the oral hygiene status and the oral health knowledge of the children.

The independent variable for the first hypothesis was the persons who carry out the oral health education programme, i.e. either dental students or kindergarten teachers.

The independent variable for the second hypothesis was whether parents were involved in the oral health education programme.

3. MATERIALS AND METHODS

3.1 Project Outline

Date	Activities
Jan 93	Project planning Determination of aim and objectives Collection of relevant information
Early Feb 93	Contact principals of kindergartens Finalize the project plan Meeting with OHEU staff
Mid Feb 93	Construction of the questionnaire Calibration of examiners
22 Feb 93	Baseline examination and interview in Victoria PM Kindergarten
23 Feb 93	Baseline examination and interview in St. Dominic Kindergarten
1 Mar 93	Baseline examination and interview in Victoria AM Kindergarten
9 Mar 93	Oral health education in St. Dominic Kindergarten conducted by dental students
15 Mar 93	Oral health education in Victoria AM Kindergarten conducted by dental students
	Oral health education in Victoria PM Kindergarten conducted by kindergarten teachers
30 Mar 93	St. Dominic Kindergarten - parents' day - examination reports given directly to parents
21 May 93	Victoria PM Kindergarten - evaluation examination and interview - examination reports given to parents
24 May 93	Victoria AM Kindergarten - evaluation examination and interview - examination reports given to parents
31 May 93	Evaluation examination and interview in St. Dominic Kindergarten
Jun-Oct 93	Data analysis Report writing

3.2 Selection of children

Two kindergartens were involved in our project. The first one was Victoria Kindergarten in Causeway Bay. As different children attended the kindergarten in the morning and in the afternoon, for our study purpose, it was considered to be composed of an AM and a PM kindergarten. The second kindergarten was St. Dominic Kindergarten in Heng Fa Chuen. One class of children studying in the highest grade was chosen from each kindergarten to be our study population. It was expected that most of the selected children were from middle and high socio-economic classes.

A letter was sent by the kindergartens to the children's parents to inform them of the project. Only children with parental consent were examined.

3.3 Interview

In the baseline and evaluation surveys, each child was interviewed individually by a dental student. A structured questionnaire consisting of three simple questions was used in the interview and this is attached as appendix 1 to this report. The first question asked how many times did the child brush his/her teeth the day before the survey. The second question asked how many times did the child take candy or chocolate the day before. The last question asked the child whether the following foods : 1) candy, 2) peanut, 3) ice-cream, 4) apple, 5) chocolate, would cause tooth decay or not. A dental knowledge score, ranging from 0 to 5, was computed for each child by counting the number of correct answers to this question.

3.4 Clinical Examination

Clinical examination of the children took place in the kindergartens. The children were examined in a supine position on tables supplied by the kindergarten. As the kindergarten principals objected to the use of probes in the examinations which they thought might frighten the young children, only disposable plain surface mirrors and an intra-oral fibre-optic light source were used.

In both the baseline and evaluation surveys, dental caries experience of the children was measured by the dmft index. The diagnostic criteria used basically followed those recommended by the World Health Organization[8]. The oral hygiene status of the children was measured by the Visible Plaque Index (VPI) according to guidelines and criteria laid down by Ainamo and Bay[9]. In summary, the index is dichotomous, visible plaque being scored if present. Partial mouth recording (right and left side alternately) was used, and the facial and lingual surfaces of each tooth were examined, resulting in a maximum of 20 potential examination sites (5 teeth x 2 examination sites x 2 jaws) per child. The VPI score for each child was computed by dividing the number of sites with visible plaque by the total number of sites examined.

A brief written report on the clinical findings of each examined child was given to his/her parents through the kindergarten together with some professional advice (Appendix 2). The reports were given to the parents of the St. Dominic Kindergarten children after the baseline examination and those of the Victoria Kindergarten children were distributed after the evaluation examination.

Two members of our student group acted as the examiners in the baseline examination and the findings were recorded by dental students on a specially designed record form (Appendix 1). In order to reduce bias, a new examiner substituting one of the dental students was employed in the evaluation examination. The new examiner was a full-time staff member of the Department of Periodontology and Public Health who had not been involved in our project and did not know which group the children belonged to at the examination.

3.5 Calibration of examiners

Since there were two examiners at both the baseline and evaluation examinations, calibration of the examiners was carried out prior to each examination. The calibration exercise was divided into two phases. The first phase involved the examination of eight dental students in the Prince Philip Dental Hospital. They were each examined by the two examiners in a dental clinic and the findings were compared and discussed by the examiners to reconcile any

disagreement. The second phase of the calibration was conducted on the first child in each kindergarten. During the survey, one in ten of the children examined were given a duplicate examination by the other examiner to check reproducibility.

3.6 Oral Health Education Programme

The oral health education programme for the children was carried out after the baseline survey. The programme in the St. Dominic Kindergarten and in the Victoria AM Kindergarten was conducted by dental students while the programme in the Victoria PM Kindergarten was conducted by school teachers.

The programme was divided into three parts and was conducted in the classrooms. The first part consisted of a puppet show telling a story about the importance of regular dental visits and avoiding candies to prevent tooth decay. The teaching aid in the second part was a big plastic puzzle board showing a child with a set of teeth. The children learned the number of primary teeth by counting the plastic teeth on the board. The exfoliation of primary incisors and how to brush the different surfaces of a tooth were also explained with the aid of this board.

The last part of the programme consisted of two games. The first one was a matching game. Some food models such as biscuit, ice-cream, sandwich, milk, and candies were given to the children and they were asked to place the models on a piece of cloth with pictures of children having either healthy or decayed teeth. Regardless of whether the children were correct in placing the food models in the right picture or not, information was given to all children about which food could easily cause tooth decay. The second one was a chess game. A piece of cloth about 0.75 x 1.0 metre was placed on the floor as the chess board. The children were divided into two groups. An representative was selected from each group to act as the chess. A big die was tossed by the children and their representatives moved forwards according to the number on the die. On the chess board, there were various pictures showing different oral health behaviours. There would be a beep sound when a child stepped on a picture showing good behaviour but no sound for bad behaviour.

Explanations were given to the children as they played. The two groups played alternatively until one group won the game when its representative reached the last square on the chess board. The winners of the games and the children who answered questions correctly were given a sticker as a reward. A story book produced by the OHEU, a colouring-in book and a toothbrush were given to the children after the programme.

The programme in the Victoria PM Kindergarten was conducted by two kindergarten teachers who had observed how the programme was carried out by dental students for the AM Kindergarten children in the morning. The two teachers received some further briefing and then they conducted the programme for the PM Kindergarten children. Two dental students observed the teachers' programme but they did not participate in the programme.

After the oral health education programme, a parents' day was organized in the St. Dominic Kindergarten. A special oral health education programme consisting of a video show, a talk and a question time was delivered to the parents. The main messages given were on plaque, gingival inflammation and dental caries. After this programme, a report on the clinical findings was given to the parents of each child individually together with some professional advice. Oral health information pamphlets and stickers were also distributed to the parents.

3.7 Data analysis

The data collected were entered into a personal computer and the computer printout was proof-read manually to detect errors in the keying-in process. The statistical package SPSS/PC+[10] was used in data analysis. Chi-square test was used to test differences in the distribution of children among the different groups. Analysis of variances (ANOVA) test and t-test were used to test differences in means. The significance level was set at $p < 0.05$.

4. RESULTS

4.1 Background of children

Parental consent to participate in our project was obtained in over 90% of the children selected. A total of 101 children were examined in the baseline survey and out of them four were absent from the evaluation survey and these were excluded from our analysis. Thus there were 97 children left in our study and they belonged to three groups.

1) Group T consisted of 34 children studying in the Victoria PM Kindergarten who had received an oral health education programme conducted by their school Teachers.

2) Group S consisted of 34 children studying in the Victoria AM Kindergarten who had received an oral health education programme conducted by dental Students.

3) Group S+P consisted of 29 children studying in the St. Dominic Kindergarten who had received an oral health education programme conducted by dental Students and whose Parents were also involved in our project.

The age distribution of the children is shown in Fig. 1. It can be seen that all of the children were 5-6 years of age. About two-thirds of the children in groups T and S were 6 years old but the majority of the children (83%) in group S+P were 5 years old. This difference was statistically significant ($p < 0.001$). About half of the children in all groups were boys and the other half girls.

The occupation of the children's parents is shown in Fig. 2. About 80% of the parents of children in groups T and S were professionals or managers and few were manual workers. Comparatively fewer parents of children in group S+P were professionals or managers and more were manual workers. This difference was statistically significant ($p = 0.04$).

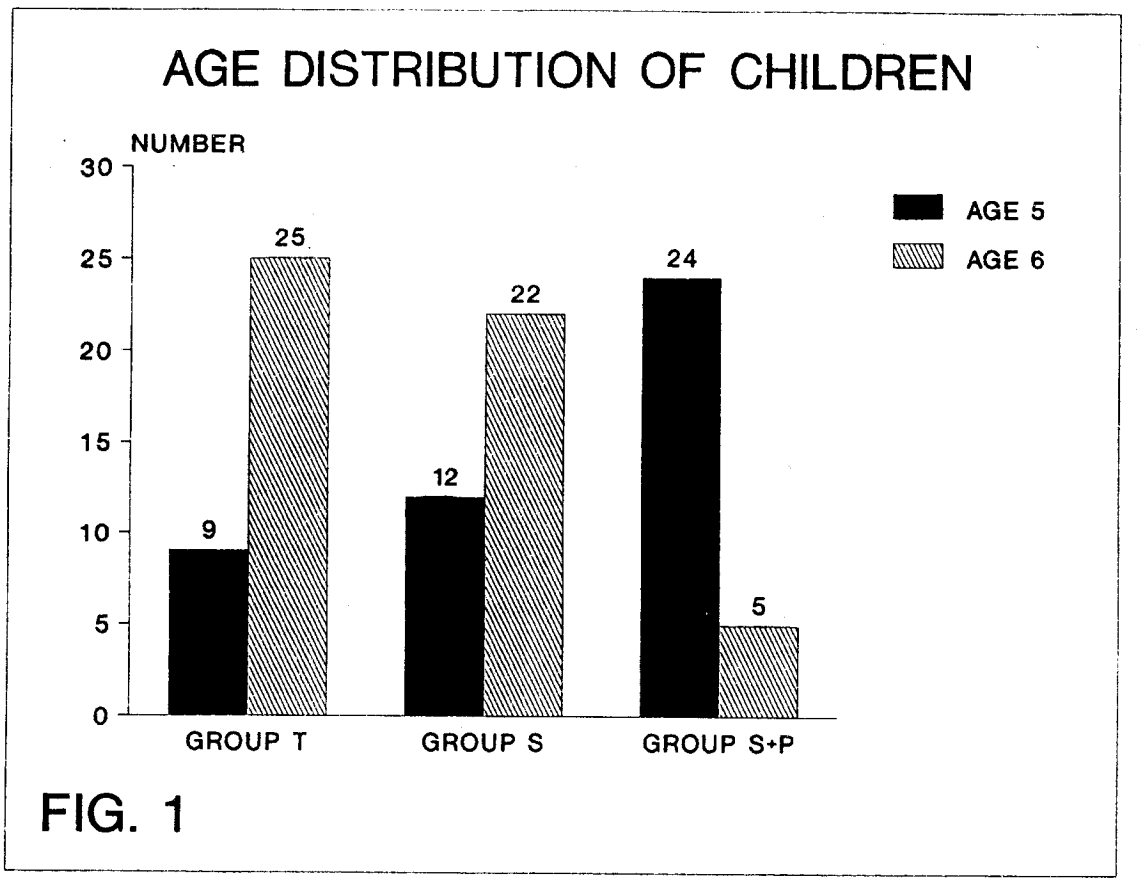
AGE DISTRIBUTION OF CHILDREN
NUMBER
30
25
20
15
10
5
0
9
25
12
22
24
5
AGE 5
AGE 6
GROUP T
GROUP S
GROUP S+P

FIG. 1

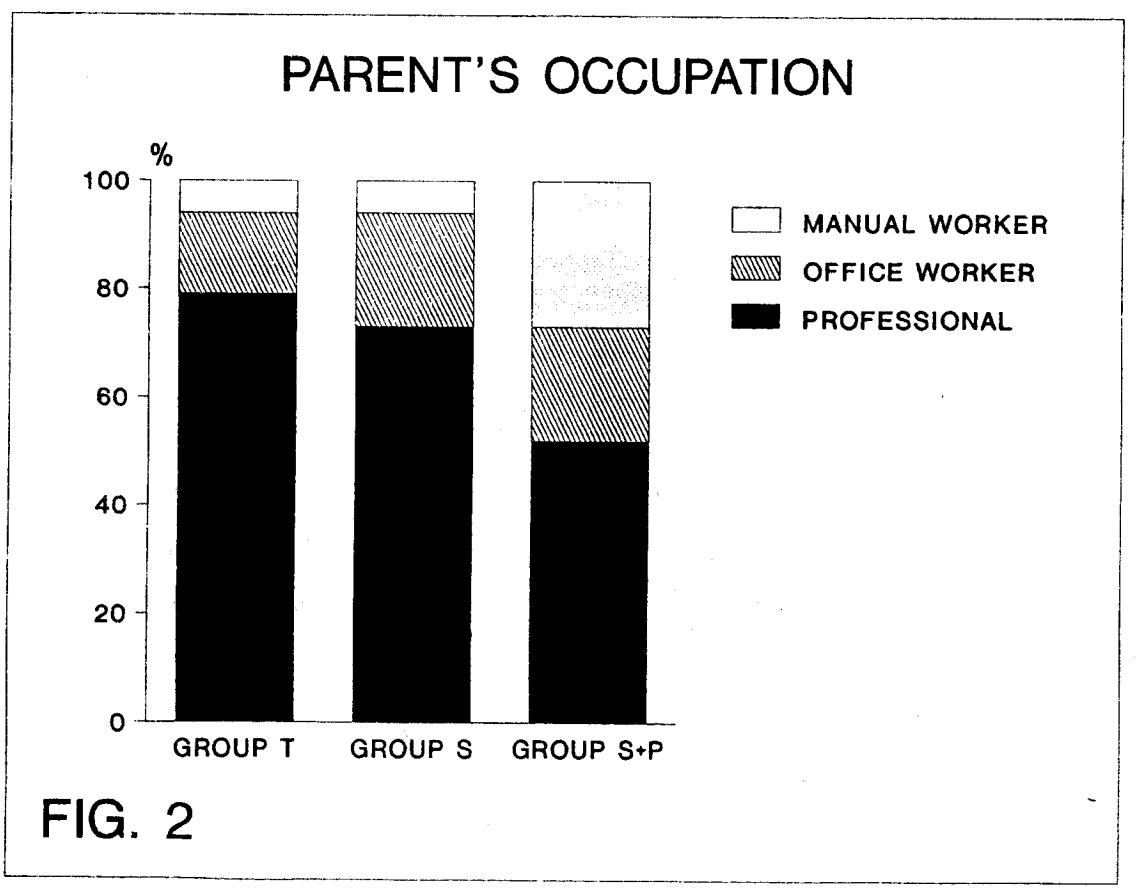
PARENT'S OCCUPATION
%
100
80
60
40
20
0
MANUAL WORKER
OFFICE WORKER
PROFESSIONAL
GROUP T
GROUP S
GROUP S+P

FIG. 2

4.2 Interview findings

At the baseline survey, about 60% of the children in groups T and S reported that they brushed their teeth twice or more the day before (Fig. 3) but only 38% of the children in group S+P reported so ($p=0.04$). There was an increase in the percentage of children who said they had brushed twice or more at the evaluation survey in all three groups. However, the improvement was only statistically significant in group S+P ($p=0.03$).

At the baseline survey, most children in all three groups reported that they had not taken any sweets the day before (Fig. 4). While the percentage of children who reported so increased to over 90% in groups S and S+P at the evaluation survey, this was the case in only half of the children in group T. This difference was statistically significant ($p<0.001$).

The children's knowledge about cariogenicity of food was in general very good before the oral health education programme. At the baseline survey, nearly all children knew that candies and chocolates could cause tooth decay and apples not (Fig. 5-7) and their answers were similar at the evaluation survey. On the contrary, less than two-thirds of the children in all groups knew that ice-cream could cause tooth decay at the baseline survey (Fig. 8). Their knowledge in this aspect improved after the oral health education programme but the improvement did not reach statistical significance ($p>0.05$). About a quarter of the children in groups S and S+P, and half of the children in group T said that peanut was cariogenic (Fig. 9) which was incorrect. Improvement was only seen in group T children at the evaluation survey.

It can be seen from Fig. 10 that the mean dental knowledge scores were similarly high for children in all three groups at the baseline survey. There was a slight general increase in the mean score for all groups at the evaluation survey but the differences between groups were not statistically significant ($p>0.05$).

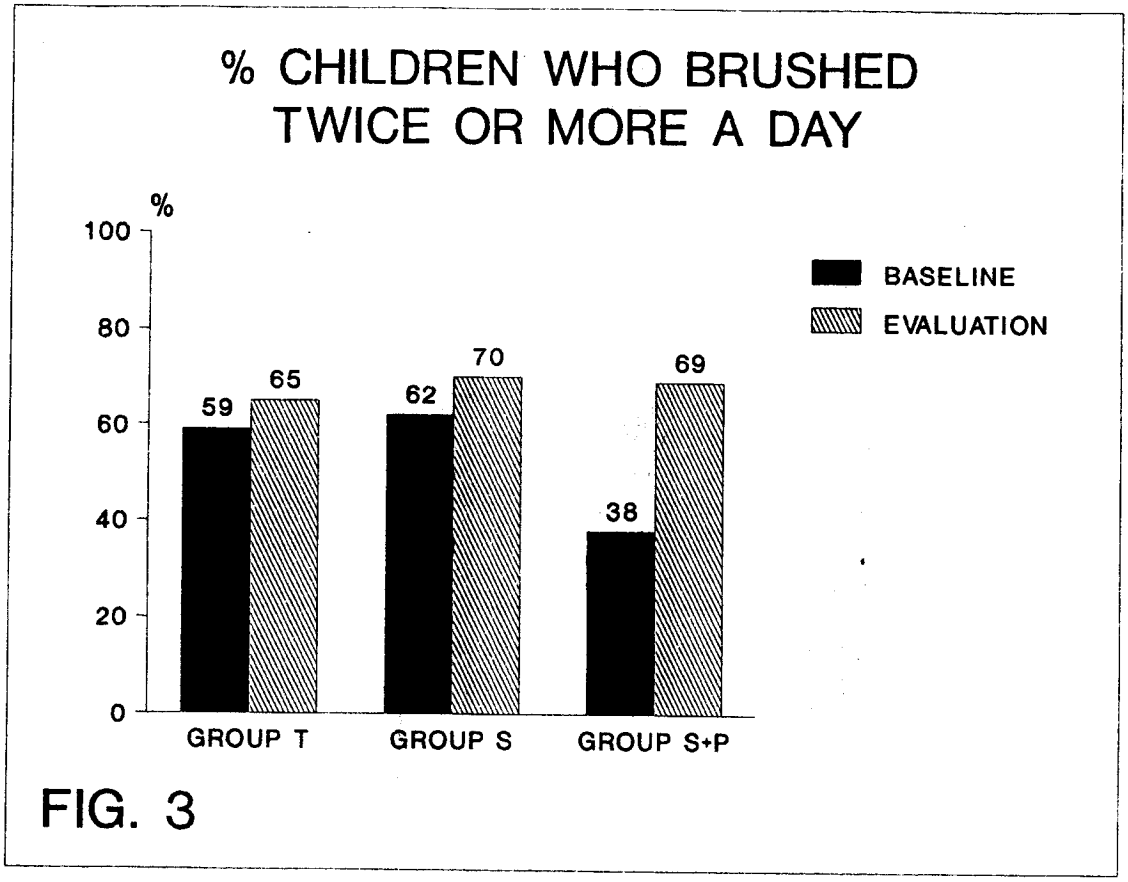
% CHILDREN WHO BRUSHED TWICE OR MORE A DAY
%
100
80
60
40
20
0
59
65
62
70
38
69
BASELINE
EVALUATION
GROUP T
GROUP S
GROUP S+P

FIG. 3

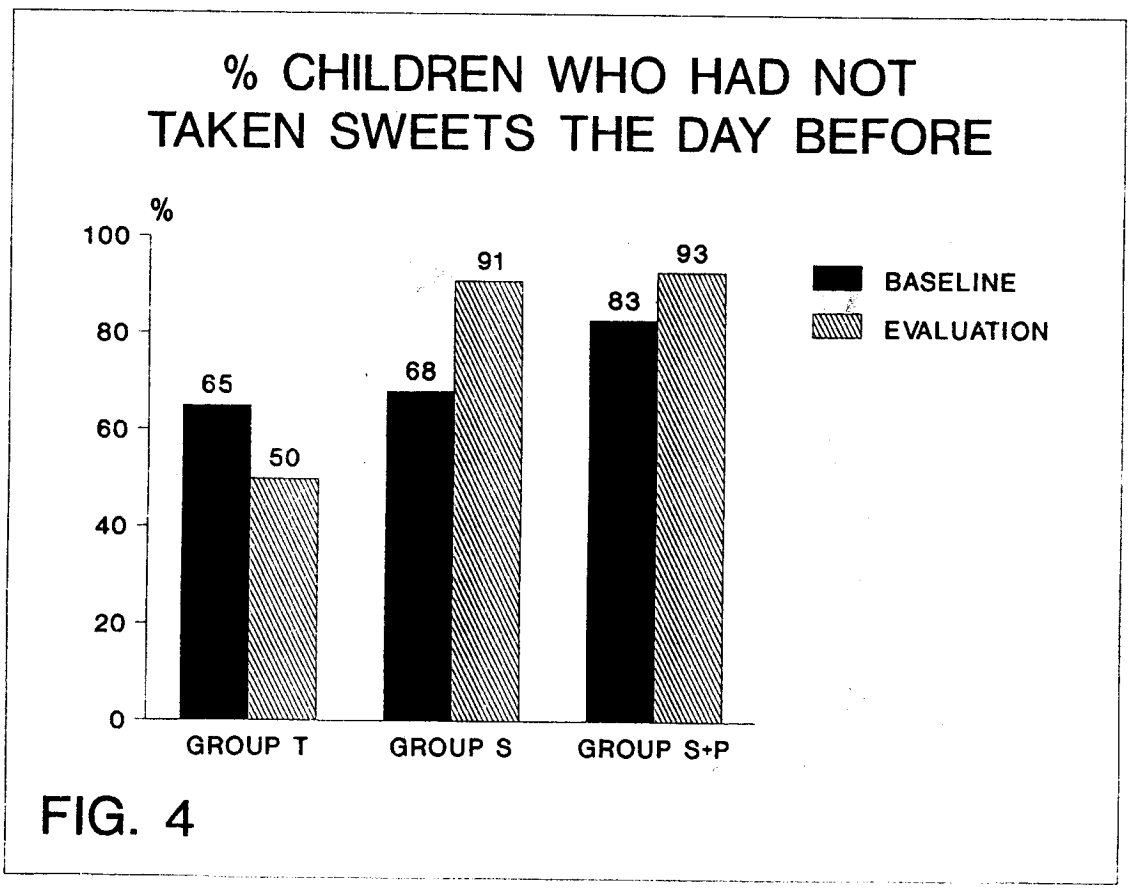
% CHILDREN WHO HAD NOT TAKEN SWEETS THE DAY BEFORE
%
100
80
60
40
20
0
65
50
68
91
83
93
BASELINE
EVALUATION
GROUP T
GROUP S
GROUP S+P

FIG. 4

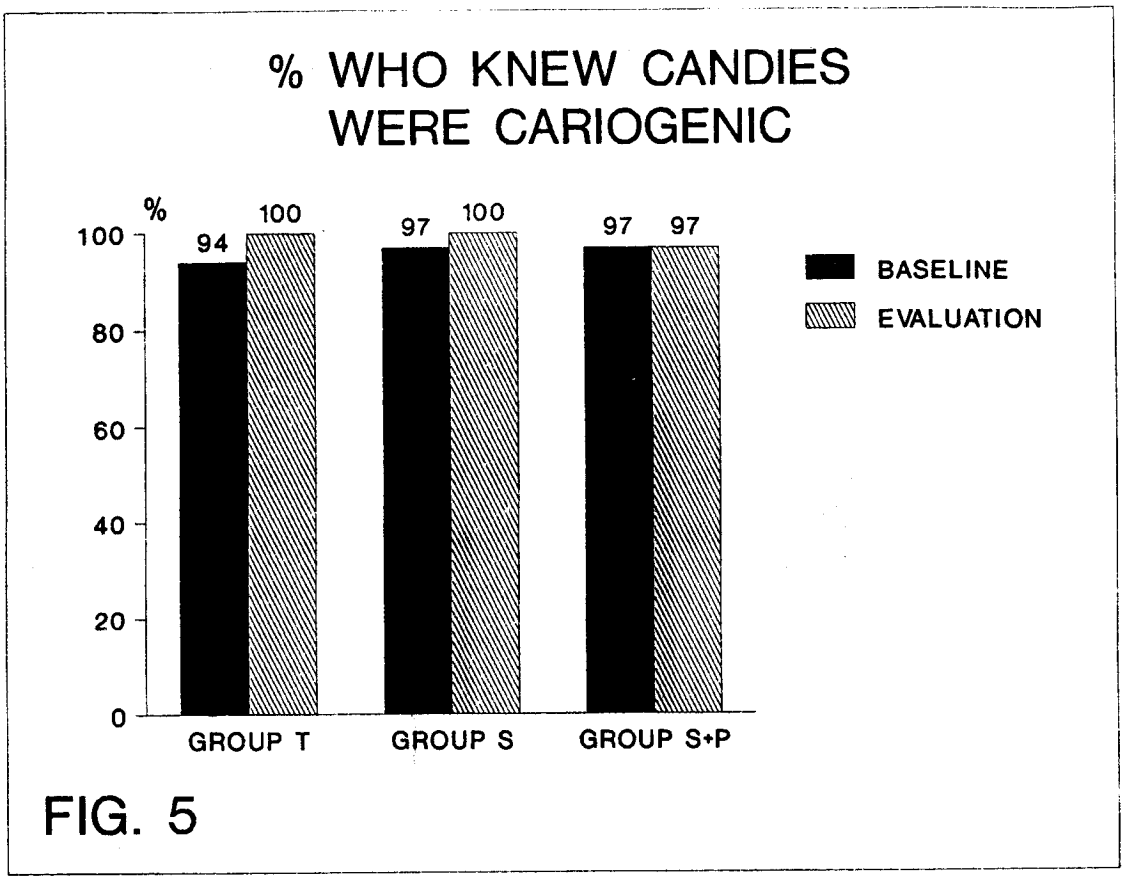
% WHO KNEW CANDIES WERE CARIOGENIC
%
100
80
60
40
20
0
94
100
97
100
97
97
GROUP T
GROUP S
GROUP S+P
BASELINE
EVALUATION

FIG. 5

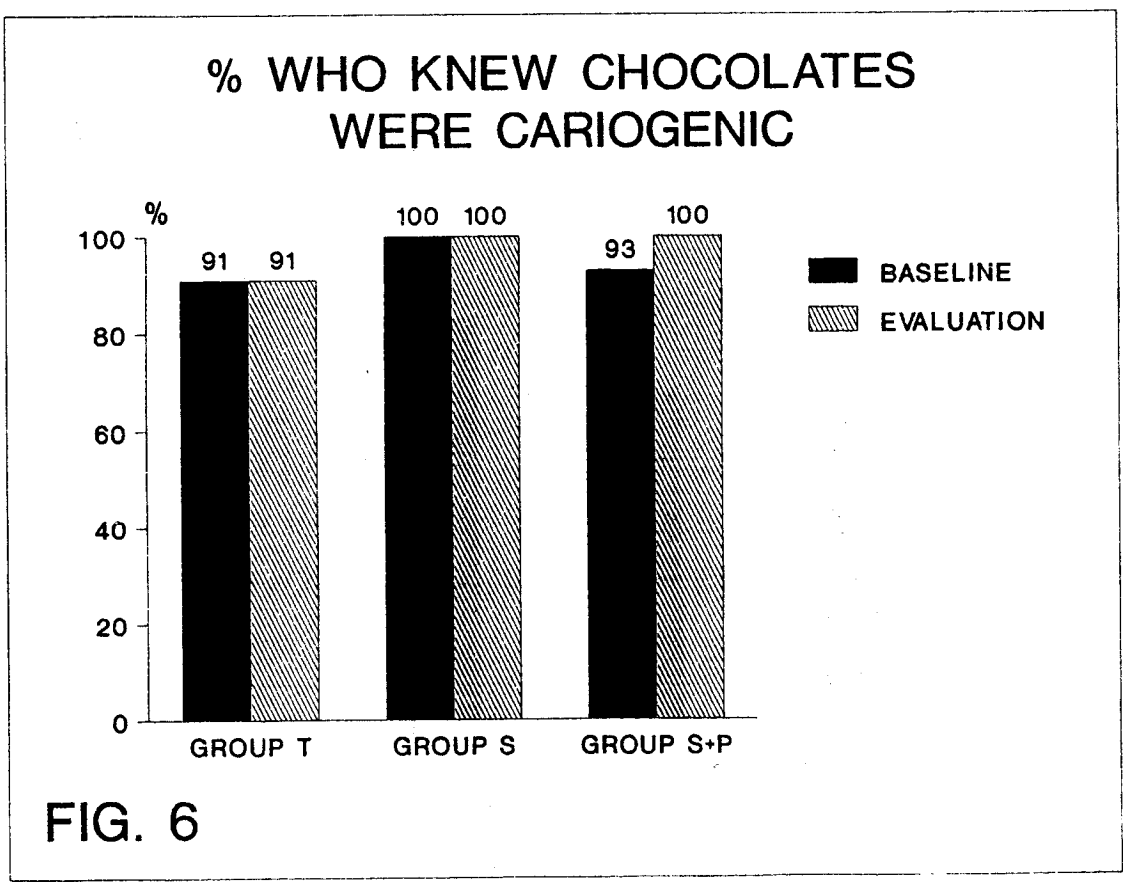
% WHO KNEW CHOCOLATES WERE CARIOGENIC
%
100
80
60
40
20
0
91
91
100
100
93
100
GROUP T
GROUP S
GROUP S+P
BASELINE
EVALUATION

FIG. 6

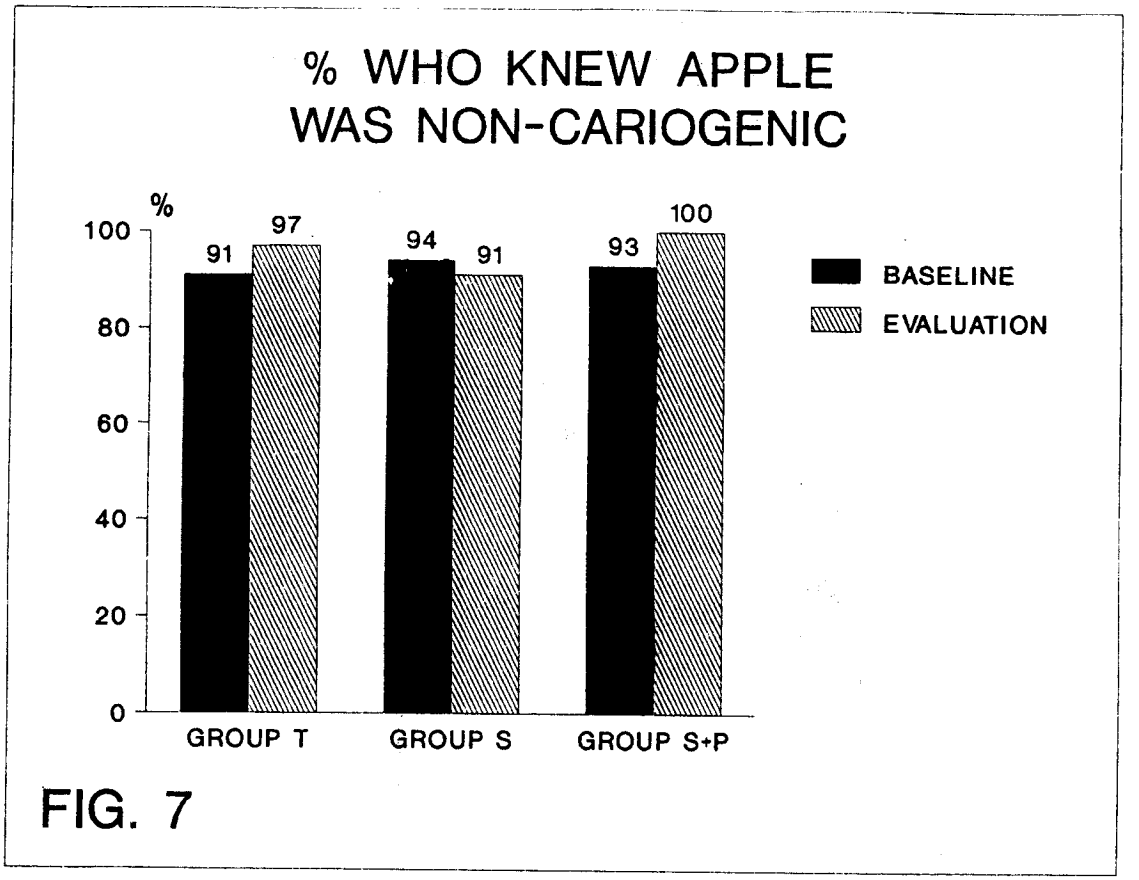
% WHO KNEW APPLE
WAS NON-CARIOGENIC
%
100
80
60
40
20
0
91
97
94
91
93
100
GROUP T
GROUP S
GROUP S+P
BASELINE
EVALUATION

FIG. 7

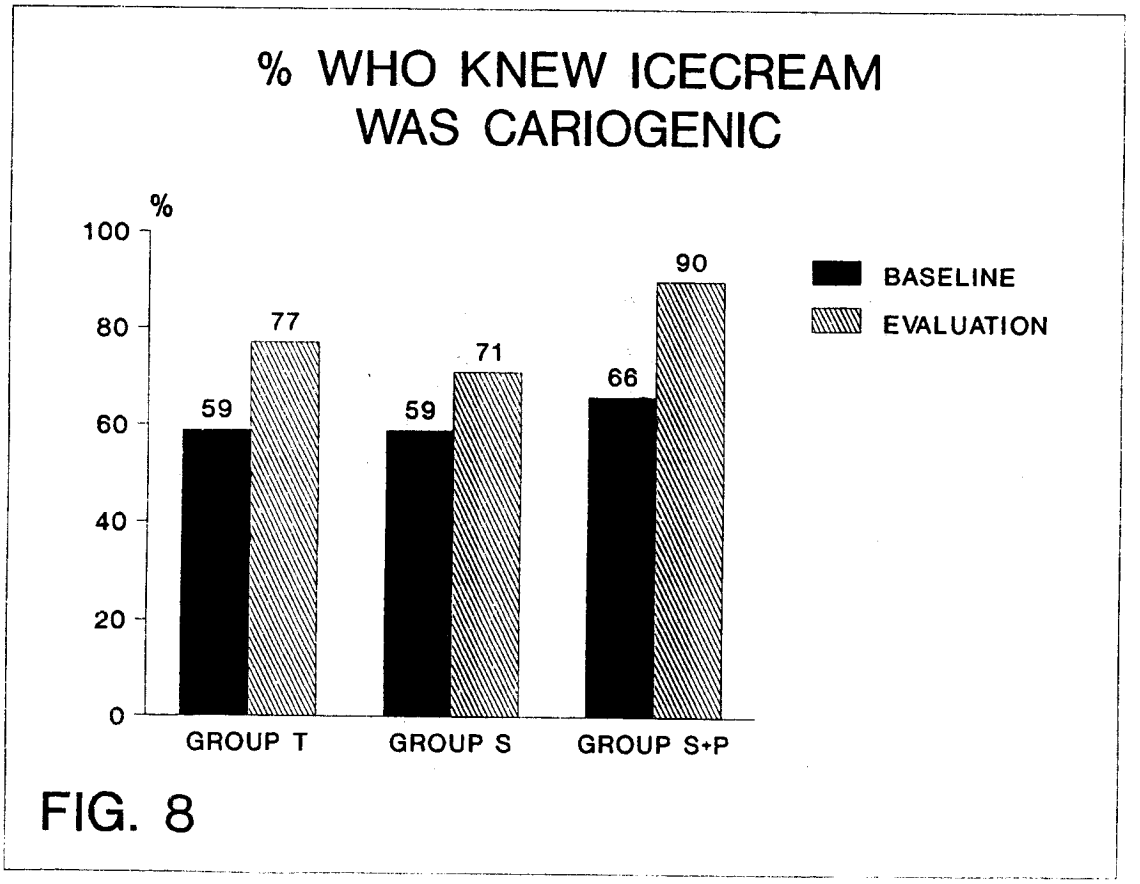
% WHO KNEW ICECREAM
WAS CARIOGENIC
%
100
80
60
40
20
0
59
77
59
71
66
90
GROUP T
GROUP S
GROUP S+P
BASELINE
EVALUATION

FIG. 8

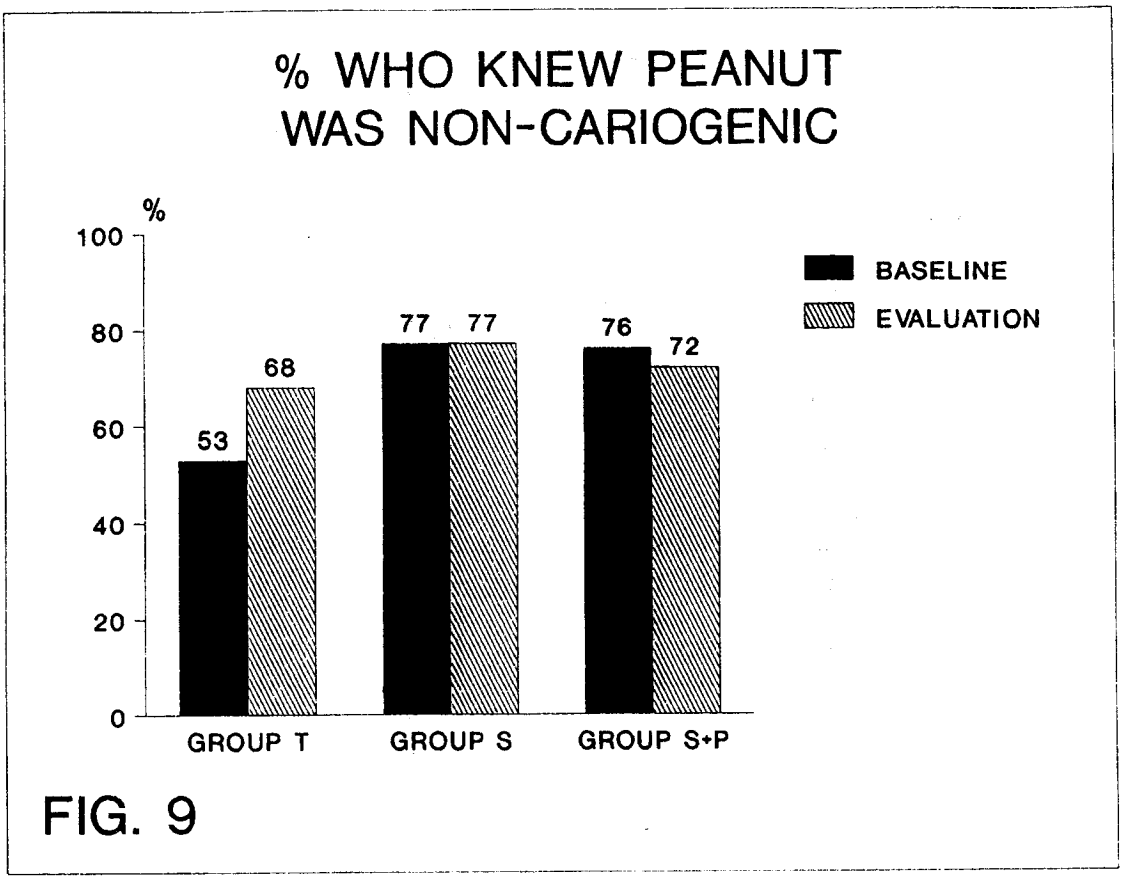
% WHO KNEW PEANUT
WAS NON-CARIOGENIC
%
100
80
60
40
20
0
53
68
77
77
76
72
BASELINE
EVALUATION
GROUP T
GROUP S
GROUP S+P

FIG. 9

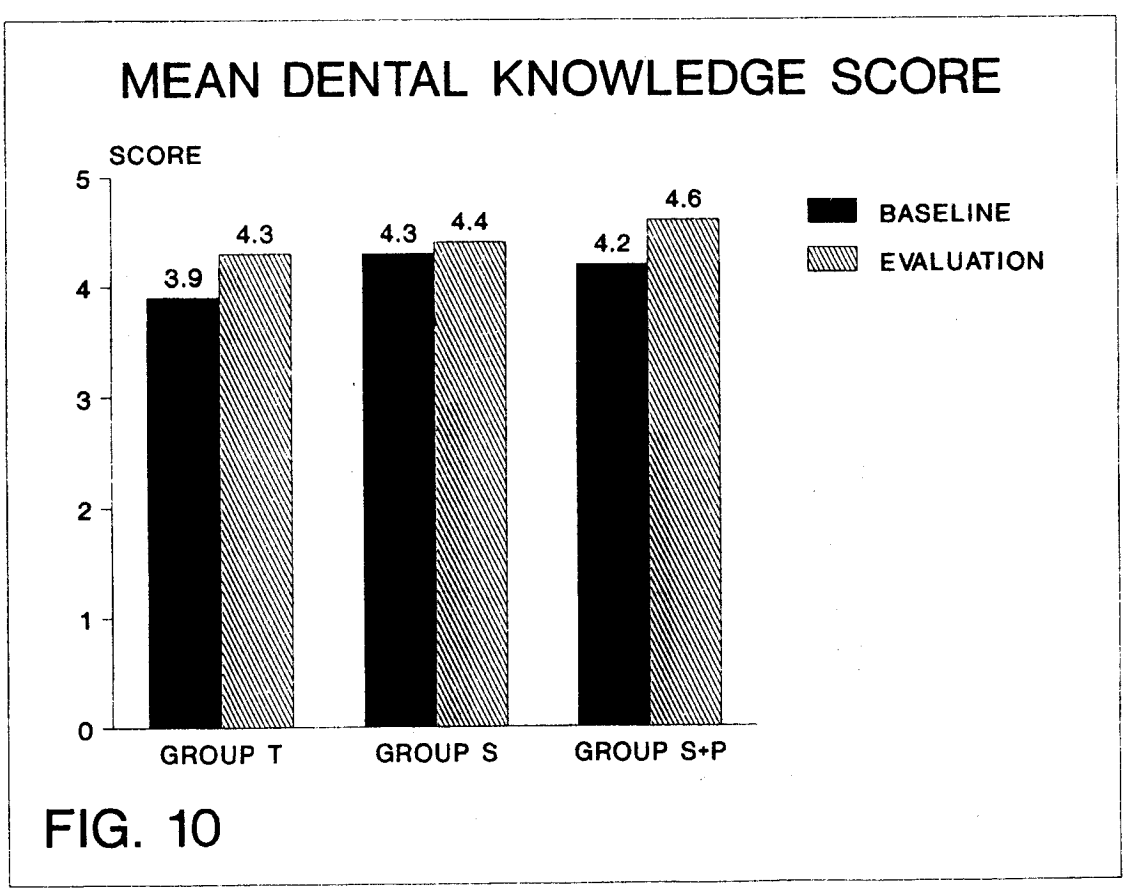
MEAN DENTAL KNOWLEDGE SCORE
SCORE
5
4
3
2
1
0
3.9
4.3
4.3
4.4
4.2
4.6
BASELINE
EVALUATION
GROUP T
GROUP S
GROUP S+P

FIG. 10

4.3 Clinical findings

The dental caries experience of the children found in the baseline survey is shown in Fig. 11. The caries experience of the children in all three groups was rather low with a mean dmft score of less than two. The differences between the three groups were not statistically significant ($p > 0.05$). The major component of the dmft index was decayed primary teeth. Only one child in the S+P group had one of his five cavities filled between the baseline and evaluation surveys.

The baseline visible plaque index (VPI) score of the children ranged from 0.47 in group S to 0.59 in group S+P (Fig. 12). This difference was statistically significant ($p = 0.03$). There was a significant decrease in the VPI for all three groups of children after the oral health education program with the largest decrease in VPI in group S+P ($p < 0.001$). The differences in VPI scores between groups at the evaluation survey were statistically significant ($p < 0.01$). The differences in VPI between groups at the evaluation survey were found by both examiner 1 who was also involved in the baseline examination and by examiner 3 who did not know which group the children belonged to (Fig. 13).

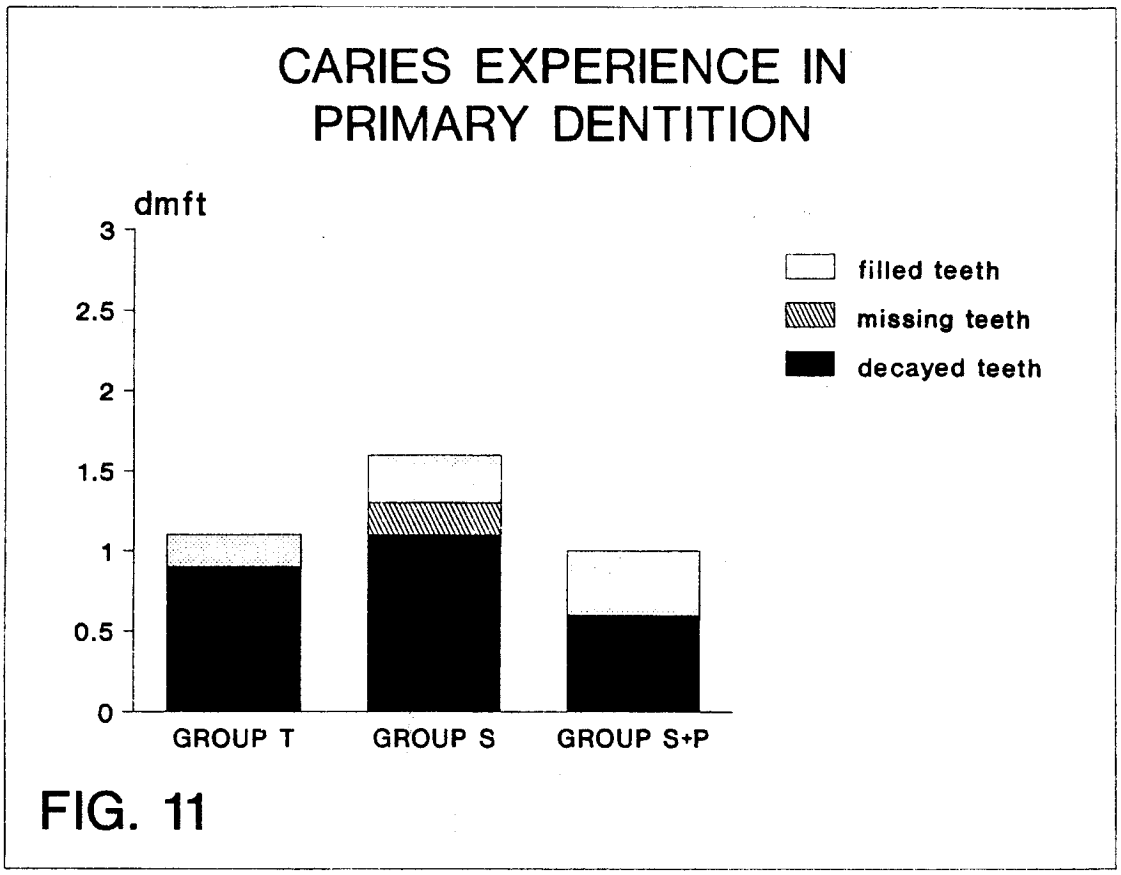
CARIES EXPERIENCE IN PRIMARY DENTITION
dmft
3
2.5
2
1.5
1
0.5
0
filled teeth
missing teeth
decayed teeth
GROUP T
GROUP S
GROUP S+P

FIG. 11

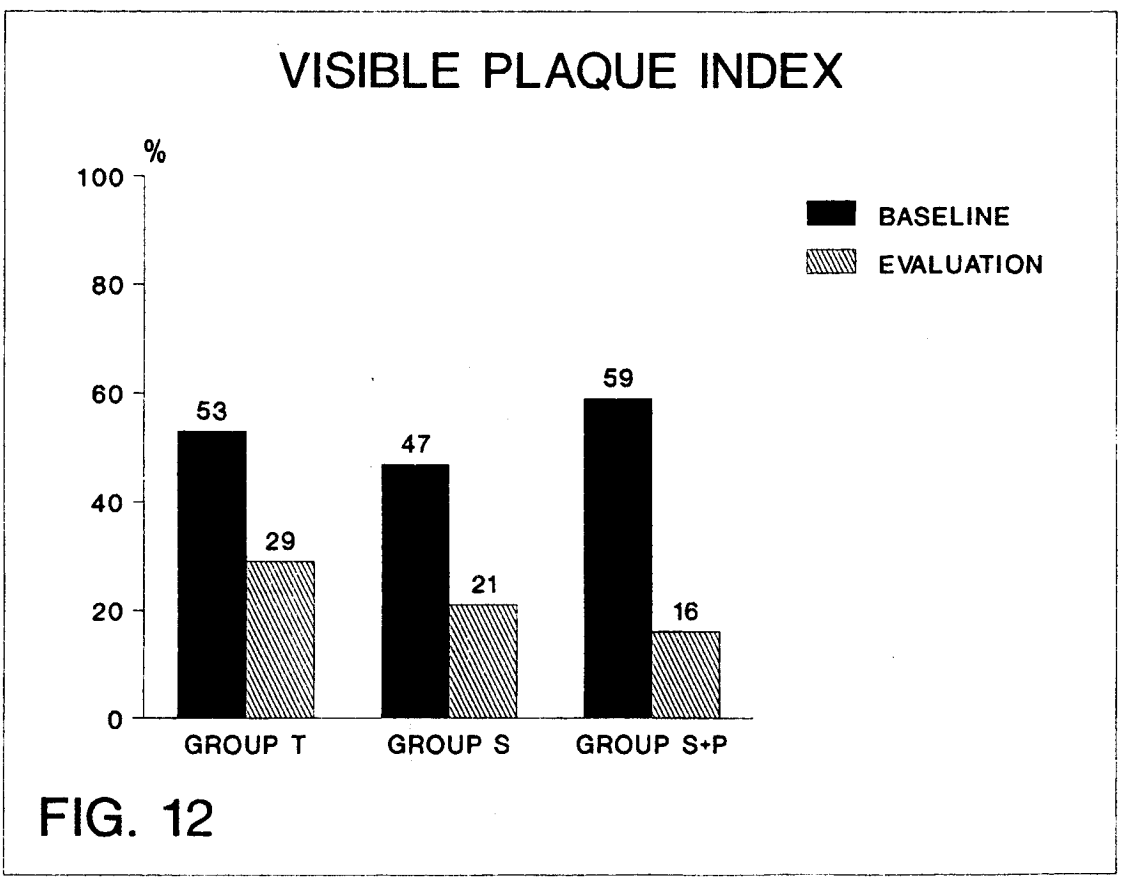
VISIBLE PLAQUE INDEX
%
100
80
60
40
20
0
BASELINE
EVALUATION
53
29
47
21
59
16
GROUP T
GROUP S
GROUP S+P

FIG. 12

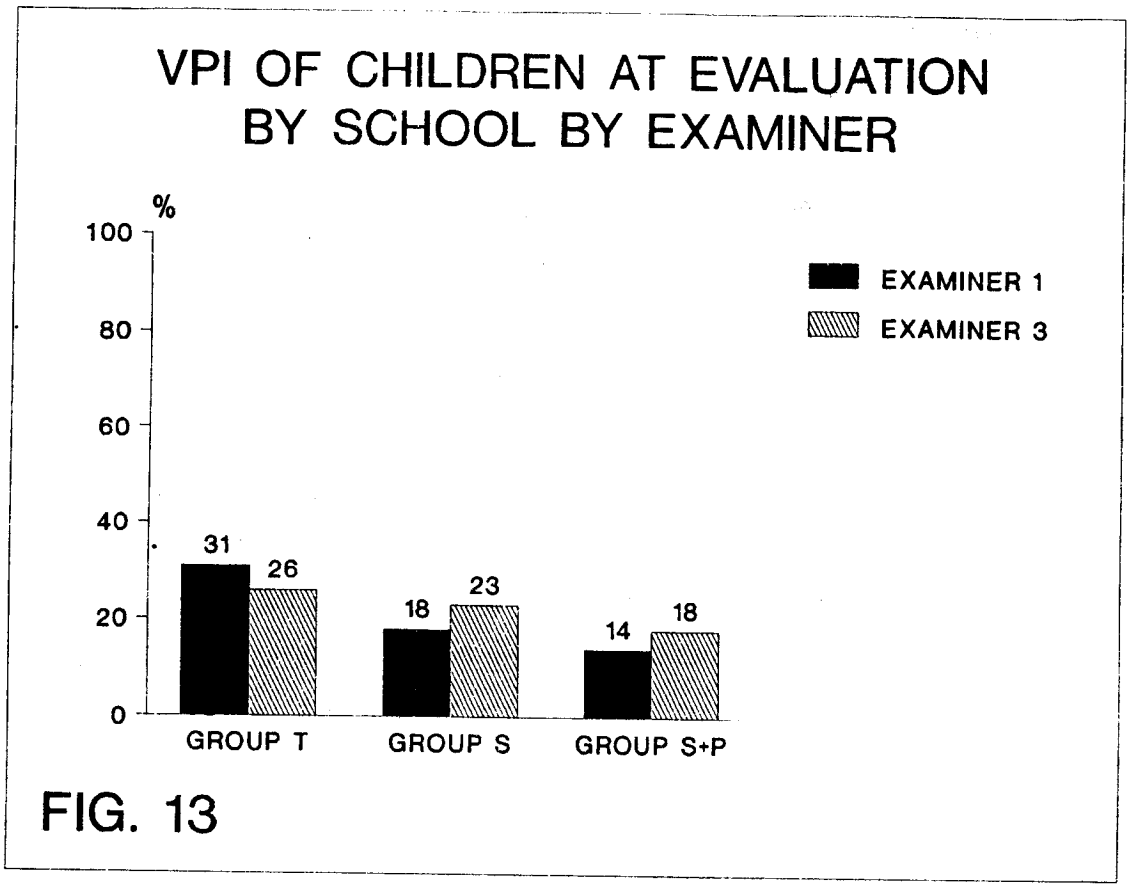
VPI OF CHILDREN AT EVALUATION
BY SCHOOL BY EXAMINER
%
100
80
60
40
20
0
31
26
18
23
14
18
EXAMINER 1
EXAMINER 3
GROUP T
GROUP S
GROUP S+P

FIG. 13

5. DISCUSSIONS

5.1 Study Population

In the hope of getting better cooperation with the schools and the parents, kindergartens which were expected to have more children coming from the middle and higher social classes were approached. Moreover, these kindergarten might have better environment and facilities for conducting the oral health education programme and the clinical examination. This was found to be the case in both of our study kindergartens.

Parents' occupation was used in our study to indicate the socio-economic background of the children because this information was readily available from the children's record in the kindergartens and was not as sensitive as asking the household income. The classification of occupation groups was based on that used in the 1991 Hong Kong Population Census[11] but was further condensed into only three groups in our study, namely professionals and managers, office workers and manual workers. Although comparatively fewer parents of group S+P children were professionals and managers, still about half of them were in this category. This proportion was much higher than that in the general working force among which only 14% were professional and managers[11]. Thus our study population was mainly from the higher socio-economic classes.

The highest grade children in the kindergarten were chosen to be our study population because they were easier to manage, more cooperative and had better learning abilities.

5.2 Clinical examination

In the clinical examinations, a low level of caries detection (visually with the aid of adequate illumination and mouth mirrors) was chosen. Only obvious carious cavities were recorded. This was found to be adequate for the purpose of our study and a high between examiner reproducibility was achieved.

Visible Plaque Index was chosen to measure the children's oral hygiene status because it was reliable, easy to apply and appropriate, especially when only lights and mirrors were used in the examination. Furthermore, a shorter time was needed to complete an examination which was very important when dealing with young children.

The two examiners employed in the baseline examination were also involved in the oral health education programme and they knew which group the children belonged to. In order to avoid bias, the blind examiner methodology was employed in the evaluation survey. This involved the introduction of a new calibrated examiner at the evaluation examination who did not know the children in order to maintain impartiality.

5.3 Results

At the baseline survey, there was a smaller proportion of children in group S+P who reported having brushed their teeth twice or more the day before compared to the other two groups. They also had a higher VPI score. This may be related to the fact that fewer children in this group were from the highest socio-economic class and they were younger.

At the evaluation survey, all three groups of children showed significant improvement in their oral hygiene status as reflected by a decrease in the VPI score. There was also an increase in the proportion of children who reported having brushed their teeth twice or more the day before. This may be attributed to the effect of the oral health education programme. However, the possibility of having a shift in the standard in the application of the VPI by the examiners at the baseline and evaluation examinations could not be ruled out.

There was an increase in the proportion of children in group T who reported having taken sweets the day before the evaluation survey compared to that found in the baseline survey while the reverse was true in the two other groups. This finding was unexpected and did not agree with other findings. This may be purely incidental. The reliability of the children's answers to this question was uncertain and there could be recall errors.

In general the children's knowledge about cariogenicity of food was very good at the baseline survey. Only for peanut and for ice-cream did a third of the children answered incorrectly. This misconception was corrected in some children after the oral health education programme. Despite this, no significant change in the overall mean dental knowledge score had occurred after the programme in all three groups.

The caries experience of the children was low with a mean dmft score of 1.5 or smaller in the three groups. The dmft index of the 6 year-olds in Hong Kong found in a survey conducted in 1986 was 2.8[12]. This may be due to the relatively high socio-economic background of the children examined in this study which had been shown to be associated with lower dmft scores in Hong Kong children[13].

The improvement in both the reported frequency of toothbrushing and the oral hygiene status of children in group S+P was significantly better than that in the other two groups ($p < 0.001$) after the oral health education programme. This may be due to the involvement of their parents in the program. Continuous monitoring of the children's oral hygiene practices at home is very important and this can only occur if the parents realise the importance of dental health. The parents were involved in this programme in the following ways :

1) Some parents attended a specially designed oral health education programme conducted in the kindergarten on the parents' day.

2) A report on the clinical findings of each child was given to his/her parents. In the report both the caries status and oral hygiene status of the child were described. Advices on the necessity to seek immediate dental care (mainly for restorations) and how the child's plaque control should be improved were also given.

3) Two oral health education pamphlets for parents prepared by the Oral Health Education Unit were distributed to the parents.

6. CONCLUSIONS

At the evaluation survey, the improvements in dental knowledge and oral hygiene status of the children in groups T and S were found to be similar ($p > 0.05$). Thus, the first null hypothesis could not be rejected and it was concluded that there was no significant difference in the effects of an oral health education programme for kindergarten children conducted by either dental students or school teachers.

At the evaluation survey, the improvement in oral hygiene status of the children in group S+P was significantly better ($p < 0.001$) than that of the children in group S. Thus, the second null hypothesis was rejected and it was concluded that involvement of parents in an oral health education programme for kindergarten children would improve its effect on the children.

7. RECOMMENDATIONS

1. In this project, the effect of the oral health education programme was evaluated after two months and this was considered to be a short-term effect. If time allowed, duration of the project should be extended so that longer term effects of the programme could be observed.

2. Since school teachers were found to be as effective as dental personnels in conducting oral health education programmes for kindergarten children, it would be more efficient to make use of them in delivering oral health education programmes to school children in the future. Thus, more training for school teachers as oral health educators should be provided.

3. Parents should be involved in oral health education programmes for kindergarten children as this can improve the effects of the programmes on the children and may lead to better long term results.

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- Dr. D. Chan of the OHEU for the provision of oral health education materials
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- Ms. Koong and staff of Victoria Kindergarten for their cooperation
- Ms. Josephine Yuen for her secretarial support
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REFERENCES

1. DeBiane C.B. *Dental health education. Theory and practice.* Philadelphia: Lea and Febiger, 1991, pp.83-96.

2. Smith L.W., Evans R.I., Soumi J.D., Friedman L.A.: Teachers as models in programme for school dental health: an evaluation of the 'Toothkeeper'. *Journal of Public Health Dentistry* 1975; 35: 81-84.

3. Craft M., Coucher R., Dickinson J.: Preventive dental health in adolescents: short and long term pupil response to trials of an integrated curriculum package. *Community Dentistry and Oral Epidemiology* 1981; 9: 199-206.

4. Department of Periodontology and Public Health. *Health education for future teachers.* Community Health Project Report series no. 16. Hong Kong: University of Hong Kong, 1985.

5. Department of Periodontology and Public Health. *Health education for future teachers - Northcote College of Education I.* Community Health Project Report series no. 25. Hong Kong: University of Hong Kong, 1986.

6. Department of Periodontology and Public Health. *Health education for future teachers - Sir Robert Black College of Education II.* Community Health Project Report series no. 26. Hong Kong: University of Hong Kong, 1986.

7. Department of Periodontology and Public Health. *The effect on children of an oral health programme given by their teachers.* Community Health Project Report series no. 70. Hong Kong: University of Hong Kong, 1992.

8. World Health Organization. *Oral health surveys - basic methods.* Geneva: World Health Organization, 1987.

9. Ainamo J., Bay I.: Problems and proposals for recording gingivitis and plaque. *International Dental Journal* 1975; 25: 229-235.

10. Norusis M.J. *SPSS/PC+ 4.0 Base Manual for the IBM PC/XT/AT and PS/2.* Chicago: SPSS Inc., 1990.

11. Census and Statistics Department. *Hong Kong 1991 Population Census Main Tables.* Hong Kong: Census and Statistics Department, 1992.

12. Evans R.W., Lo E.C.M.: Effects of School Dental Care Service in Hong Kong - primary teeth. *Community Dentistry and Oral Epidemiology* 1992; 20: 193-195.

13. Evans R.W., Lo E.C.M., Darvell B.W.: Determinants of variation in dental caries experience in primary teeth of Hong Kong children aged 6-8 years. *Community Dentistry and Oral Epidemiology* 1993; 21: 1-3.

Appendix 1

CASE NO. ☐☐☐ 1-3

KINDERGARTEN PROJECT, Group 4.1 1993

NAME : _____ EXAMINER : ☐ 4

TOOTH	55	54	53	52	51	61	62	63	64	65	75	74	73	72	71	81	82	83	84	85
Status																				
	5-9					11-15					17-21					23-27				

Status
0 = Sound
1 = Decayed
2 = Filled
3=Extracted
4=Unerupted

VISIBLE PLAQUE INDEX

Upper	1	2	3	4	5	Lower	1	2	3	4	5
Buccal						Buccal					
Lingual						Lingual					
	28-32 , 34-38						40-44 , 46-50				

0 = no plaque
1 = visible plaque
9 = excluded

SEX : ☐ 60 1 = Male 2 = Female AGE : ☐ 61

Occupation of father : ☐ 62 mother : ☐ 63

1. 你昨日擦了多少次牙？ ____ 次 52
2. 你昨日吃了多少次糖或朱古力？ ____ 次 53
3. 以下的食物會不會引致蛀牙？

	1. 會	2. 不會	3. 不知道
A. 糖	----	----	---- 54
B. 花生	----	----	---- 55
C. 雪糕	----	----	---- 56
D. 蘋果	----	----	---- 57
E. 朱古力	----	----	---- 58

Appendix 2

University of Hong Kong
Faculty of Dentistry

The Prince Philip Dental Hospital, Hospital Road, Hong Kong

香港大學牙醫學院
幼稚園口腔健康調查

此致：_____的家長

口腔檢查撮要報告

多謝你同意　貴子女於本月參加在幼稚園內舉行的口腔健康檢查。這是一個普通的檢查而且沒有拍攝過X-光照片，在檢查過程中我們發現　貴子女沒有明顯的蛀牙蹟象。

他/她的口腔衞生情況良好/一般/欠佳。

我們建議 他/她要維持良好的口腔護理習慣及定期去看牙醫作口腔檢查。

他/她刷牙時要特別注意清潔下列牙齒：

☐ 上顎門牙
☐ 上顎大牙
☐ 下顎門牙
☐ 下顎大牙

四年班第一組牙醫學生及
盧展民醫生
一九九三年五月三十一日

University of Hong Kong
Faculty of Dentistry

The Prince Philip Dental Hospital, Hospital Road, Hong Kong

香港大學牙醫學院
幼稚園口腔健康調查

此致：_____的家長

口腔檢查撮要報告

多謝你同意　貴子女於本月參加在幼稚園內舉行的口腔健康檢查。這是一個普通的檢查而且沒有拍攝過X-光照片，在檢查過程中我們發現　貴子女有____隻蛀牙。

他/她的口腔衞生情況良好/一般/欠佳。

我們建議 他/她要加強口腔護理及在短期內去看牙醫接受治療。

他/她刷牙時要特別注意清潔下列牙齒：

☐　上顎門牙
☐　上顎大牙
☐　下顎門牙
☐　下顎大牙

四年班第一組牙科學生及
盧展民醫生
一九九三年五月三十一日